IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

In re application of: Shaffer, et al.

Application No.: 09/527,085

Filed: March 16, 2000

Title: METHOD AND APPARATUS FOR
REDIRECTING NETWORK TRAFFIC

Attorney Docket No.: CISCP141/1947

Examiner: DINH, KHANH Q

Group: 2155

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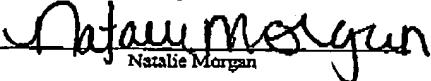
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PRE-APPEAL BRIEF REQUEST FOR REVIEW

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a Notice of Appeal.

The review is requested for the reasons stated on the attached sheets.

Remarks begin on page 7 of this paper.

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IN THE CLAIMS

No claim amendments are currently being made.

1. (previously presented) A method for replicating a plurality of original packets in both directions of a packet flow received by a first device, the packet flow following a first routing path between a source device and a destination device, the first routing path including the first device, the method comprising:

receiving a request from a second device for connecting with the first device, the request identifying at least one predetermined criterion;

connecting the first device with the second device in response to the request;

receiving both directions of the packet flow with the first device;

in the first device, identifying the original packets from both directions of the packet flow according to the at least one predetermined criterion;

in the first device, generating replicate packets corresponding to the original packets;

transmitting the original packets from the first device along the first routing path to the source and destination devices; and

transmitting the replicate packets from the first device along a second routing path, the second routing path being different from the first routing path and including the second device.

2. (Canceled)

3. (previously presented) The method of claim 1 wherein the first and second devices communicate using a protocol which comprises a packet redirection protocol.

4. (Original) The method of claim 3 wherein the packet redirection protocol comprises an object caching protocol.

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5. (previously presented) The method of claim 1 wherein the original packets indicate the destination device.

6. (previously presented) The method of claim 1 wherein the second device comprises a test device for facilitating inspection of the replicate packets.

7. (canceled)

8. (previously presented) A method for replicating a plurality of original packets in a packet flow received by a first device, the packet flow following a first routing path which includes the first device, the method comprising:

receiving a request from a second device for connecting with the first device, the request identifying at least one predetermined criterion;

connecting the first device with the second device in response to the request;

receiving the packet flow with the first device;

in the first device, identifying the original packets in the packet flow according to the at least one predetermined criterion;

in the first device, generating replicate packets corresponding to the original packets;

transmitting the original packets from the first device along the first routing path;

transmitting the replicate packets from the first device along a second routing path, the second routing path being different from the first routing path and including the second device;

determining which of the original and replicate packets reach their respective destination devices first, thereby identifying a winner destination device; and

awarding a connection to an originating device to the winner destination device.

9-10. (Canceled)

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11. (Original) The method of claim 1 wherein the original packets originate from a source device, the method for replicating the original packets being transparent to the source device.

12. (Original) The method of claim 1 wherein the original packets indicate a destination device, the method for replicating the original packets being transparent to the destination device.

13. (Original) The method of claim 1 wherein the first device comprises a router.

14. (previously presented) The method of claim 1 wherein the at least one predetermined criterion comprises at least one selected from a group consisting of a source address, a destination address, a socket, a port, and a protocol type.

15-27. (canceled)

28. (previously presented) A router operable to replicate a plurality of original packets in both directions of a packet flow received by a first device, the packet flow following a first routing path between a source device and a destination device, the first routing path including the first device, the router comprising:

a memory having at least a portion of a router operating system stored therein; and

a processor for controlling operation of the router according to the router operating system, the processor being configured by the router operating system to:

receive a request from a second device for connecting with the first device, the request identifying at least one predetermined criterion;

connect the first device with the second device in response to the request;

receive both directions of the packet flow with the first device;

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in the first device, identify the original packets from both directions of the packet flow according to the at least one predetermined criterion;

in the first device, generate replicate packets corresponding to the original packets;

transmit the original packets from the first device along the first routing path to the source and destination devices; and

transmit the replicate packets from the first device along a second routing path, the second routing path being different from the first routing path and including the second device.

29. (previously presented)   An apparatus for replicating a plurality of original packets in both directions of a packet flow received by a first device, the packet flow following a first routing path between a source device and a destination device, the first routing path including the first device, the apparatus comprising:

means for receiving a request from a second device for connecting with the first device, the request identifying at least one predetermined criterion;

means for connecting the first device with the second device in response to the request;

means for receiving both directions of the packet flow with the first device;

means for, in the first device, identifying the original packets from both directions of the packet flow according to the at least one predetermined criterion;

means for, in the first device, generating replicate packets corresponding to the original packets;

means for transmitting the original packets from the first device along the first routing path to the source and destination devices; and

means for transmitting the replicate packets from the first device along a second routing path, the second routing path being different from the first routing path and including the second device.

30. (previously presented) A computer readable medium on which is provided a computer code for replicating a plurality of original packets in both directions of a packet flow received by a first device, the packet flow following a first routing path between a source device

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and a destination device, the first routing path including the first device, the computer code comprising instructions for:

receiving a request from a second device for connecting with the first device, the request identifying at least one predetermined criterion;

connecting the first device with the second device in response to the request;

receiving both directions of the packet flow with the first device;

in the first device, identifying the original packets from both directions of the packet flow according to the at least one predetermined criterion;

in the first device, generating replicate packets corresponding to the original packets;

transmitting the original packets from the first device along the first routing path to the source and destination devices; and

transmitting the replicate packets from the first device along a second routing path, the second routing path being different from the first routing path and including the second device.

31. (previously presented) A router operable to replicate a plurality of original packets in a packet flow received by a first device, the packet flow following a first routing path which includes the first device, the router comprising:

a memory having at least a portion of a router operating system stored therein; and

a processor for controlling operation of the router according to the router operating system, the processor being configured by the router operating system to:

receive a request from a second device for connecting with the first device, the request identifying at least one predetermined criterion;

connect the first device with the second device in response to the request;

receive the packet flow with the first device;

in the first device, identify the original packets in the packet flow according to the at least one predetermined criterion;

in the first device, generate replicate packets corresponding to the original packets;

transmit the original packets from the first device along the first routing path;

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transmit the replicate packets from the first device along a second routing path, the second routing path being different from the first routing path and including the second device;

determine which of the original and replicate packets reach their respective destination devices first, thereby identifying a winner destination device; and

award a connection to an originating device to the winner destination device.

32. (previously presented) An apparatus for replicating a plurality of original packets in a packet flow received by a first device, the packet flow following a first routing path which includes the first device, the apparatus comprising:

means for receiving a request from a second device for connecting with the first device, the request identifying at least one predetermined criterion;

means for connecting the first device with the second device in response to the request;

means for receiving the packet flow with the first device;

means for, in the first device, identifying the original packets in the packet flow according to the at least one predetermined criterion;

means for, in the first device, generating replicate packets corresponding to the original packets;

means for transmitting the original packets from the first device along the first routing path;

means for transmitting the replicate packets from the first device along a second routing path, the second routing path being different from the first routing path and including the second device;

means for determining which of the original and replicate packets reach their respective destination devices first, thereby identifying a winner destination device; and

means for awarding a connection to an originating device to the winner destination device.

33. (previously presented) A computer readable medium on which is provided a computer code for replicating a plurality of original packets in a packet flow received by a first device, the packet flow following a first routing path which includes the first device, the computer code comprising instructions for:

receiving a request from a second device for connecting with the first device, the request identifying at least one predetermined criterion;

connecting the first device with the second device in response to the request;

receiving the packet flow with the first device;

in the first device, identifying the original packets in the packet flow according to the at least one predetermined criterion;

in the first device, generating replicate packets corresponding to the original packets;

transmitting the original packets from the first device along the first routing path;

transmitting the replicate packets from the first device along a second routing path, the second routing path being different from the first routing path and including the second device;

determining which of the original and replicate packets reach their respective destination devices first, thereby identifying a winner destination device; and

awarding a connection to an originating device to the winner destination device.

34. (previously presented) The method of claim 8 wherein the first and second devices communicate using a protocol which comprises a packet redirection protocol.

35. (previously presented) The method of claim 34 wherein the packet redirection protocol comprises an object caching protocol.

36. (previously presented) The method of claim 8 wherein the second device comprises a test device for facilitating inspection of the replicate packets.

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37. (previously presented) The method of claim 8 wherein the original packets originate from a source device, the method for replicating the original packets being transparent to the source device.

38. (previously presented) The method of claim 8 wherein the original packets indicate a destination device, the method for replicating the original packets being transparent to the destination device.

39. (previously presented) The method of claim 8 wherein the first device comprises a router.

40. (previously presented) The method of claim 8 wherein the at least one predetermined criterion comprises at least one selected from a group consisting of a source address, a destination address, a socket, a port, and a protocol type.

41. (previously presented) A method for replicating a plurality of original packets in a packet flow received by a first device, the packet flow following a first routing path which includes the first device, the packet flow corresponding to a destination, the method comprising:

receiving a request from a second device for connecting with the first device, the request identifying at least one predetermined criterion;

connecting the first device with the second device in response to the request;

receiving the packet flow with the first device;

in the first device, identifying the original packets in the packet flow according to the at least one predetermined criterion;

in the first device, generating replicate packets corresponding to the original packets;

transmitting the original packets from the first device along the first routing path to the destination; and

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transmitting the replicate packets from the first device along a second routing path, the second routing path being different from the first routing path and including the second device,

wherein the destination is different from the second device.

42. (previously presented) The method of claim 41 wherein the first and second devices communicate using a protocol which comprises a packet redirection protocol.

43. (previously presented) The method of claim 42 wherein the packet redirection protocol comprises an object caching protocol.

44. (previously presented) The method of claim 41 wherein the original packets indicate a destination device, the destination device being included in the first routing path, the first device transmitting the original packets to the destination device via the first routing path, the second device facilitating transmission of the replicate packets to the destination device via the second routing path.

45. (previously presented) The method of claim 41 wherein the second device comprises a test device for facilitating inspection of the replicate packets.

46. (previously presented) The method of claim 41 wherein each of the original packets indicate one of a plurality of destination devices each of the destination devices being logically connected with the first device via a protocol, a first one of the destination devices being included in the first routing path, a second one of destination devices being included in the second routing path, and wherein the replicate packets are transmitted along the second routing path to the second one of the destination devices.

47. (previously presented) The method of claim 41 further comprising:

determining which of the original and replicate packets reach their respective destination devices first, thereby identifying a winner destination device; and

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awarding a connection to an originating device to the winner destination device.

48. (previously presented) The method of claim 41 wherein the original packets originate from a source device, the method for replicating the original packets being transparent to the source device.

49. (previously presented) The method of claim 41 wherein the original packets indicate a destination device, the method for replicating the original packets being transparent to the destination device.

50. (previously presented) The method of claim 41 wherein the first device comprises a router.

51. (previously presented) The method of claim 41 wherein the at least one predetermined criterion comprises at least one selected from a group consisting of a source address, a destination address, a socket, a port, and a protocol type.

52. (previously presented) A router operable to replicate a plurality of original packets in a packet flow, the packet flow following a first routing path which includes the router, the packet flow corresponding to a destination, the router comprising:

a memory having at least a portion of a router operating system stored therein; and

a processor for controlling operation of the router according to the router operating system, the processor being configured by the router operating system to:

receive a request from a requesting device for connecting with the router, the request identifying at least one predetermined criterion;

connect the router with the requesting device in response to the request;

receive the packet flow with the router;

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identify the original packets in the packet flow according to the at least one predetermined criterion;

generate replicate packets corresponding to the original packets;

transmit the original packets from the router along the first routing path to the destination; and

transmit the replicate packets from the router along a second routing path, the second routing path being different from the first routing path and including the requesting device,

wherein the destination is different from the second device.

53. (previously presented) An apparatus for replicating a plurality of original packets in a packet flow received by a first device, the packet flow following a first routing path which includes the first device, the packet flow corresponding to a destination, the method comprising:

means for receiving a request from a second device for connecting with the first device, the request identifying at least one predetermined criterion;

means for connecting the first device with the second device in response to the request;

means for receiving the packet flow;

means for identifying the original packets in the packet flow according to the at least one predetermined criterion;

means for generating replicate packets corresponding to the original packets;

means for transmitting the original packets along the first routing path to the destination; and

means for transmitting the replicate packets along a second routing path, the second routing path being different from the first routing path and including the second device,

wherein the destination is different from the second device.

54. (previously presented) A computer program product for replicating a plurality of original packets in a packet flow received by a processing device, the packet flow following a

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first routing path which includes the processing device, the packet flow corresponding to a destination, the computer program product comprising:

at least one computer readable medium; and

computer program instructions stored in the at least one computer-readable medium for causing the processing device to:

receive a request from a second device for connecting with the processing device, the request identifying at least one predetermined criterion;

connect with the second device in response to the request;

receive the packet flow;

identify the original packets in the packet flow according to the at least one predetermined criterion;

generate replicate packets corresponding to the original packets;

transmit the original packets along the first routing path to the destination; and

transmit the replicate packets along a second routing path, the second routing path being different from the first routing path and including the second device,

wherein the destination is different from the second device.

55. (previously presented) A method for remotely monitoring a portion of a packet flow associated with a first device using a second device, the packet flow following a first routing path, the packet flow corresponding to a destination, the method comprising:

receiving a request from the second device for connecting with the first device via a protocol;

logically connecting with the second device via the protocol;

receiving the packet flow with the first device, the first device being included in the first routing path;

in the first device, identifying original packets in the packet flow according to at least one predetermined criterion;

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in the first device, generating replicate packets corresponding to the original packets;

transmitting the original packets from the first device along the first routing path to the destination; and

transmitting the replicate packets from the first device to the second device along a second routing path, the second routing path being different from the first routing path,

wherein the destination is different from the second device.

56. (previously presented) A router operable to facilitate monitoring by a remote device of a portion of a packet flow associated with a router, the packet flow following a first routing path which includes the router, the packet flow corresponding to a destination, the router comprising:

a memory having at least a portion of a router operating system stored therein; and

a processor for controlling operation of the router according to the router operating system, the processor being configured by the router operating system to:

receive a request from the remote device for connecting with the first device via a protocol;

logically connect with the remote device via the protocol;

receive the packet flow;

identify original packets in the packet flow according to at least one predetermined criterion;

generate replicate packets corresponding to the original packets;

transmit the original packets along the first routing path to the destination; and

transmit the replicate packets to the remote device along a second routing path, the second routing path being different from the first routing path,

wherein the destination is different from the second device.

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57. (previously presented) A router operable to facilitate monitoring by a remote device of a portion of a packet flow associated with a router, the packet flow following a first routing path which includes the router, the packet flow corresponding to a destination, the router comprising:

means for receiving a request from the remote device for connecting with the first device via a protocol;

means for logically connecting with the remote device via the protocol;

means for receiving the packet flow;

means for identifying original packets in the packet flow according to at least one predetermined criterion;

means for generating replicate packets corresponding to the original packets;

means for transmitting the original packets along the first routing path to the destination; and

means for transmitting the replicate packets to the remote device along a second routing path, the second routing path being different from the first routing path,

wherein the destination is different from the second device.

58. (previously presented) A computer readable medium on which is provided a computer code for facilitating monitoring by a remote device of a portion of a packet flow associated with a router, the packet flow following a first routing path which includes the router, the packet flow corresponding to a destination, the computer code comprising instructions for:

receiving a request from the remote device for connecting with the first device via a protocol;

logically connecting with the remote device via the protocol;

receiving the packet flow;

identifying original packets in the packet flow according to at least one predetermined criterion;

generating replicate packets corresponding to the original packets;

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transmitting the original packets along the first routing path to the destination; and

transmitting the replicate packets to the remote device along a second routing path, the second routing path being different from the first routing path,

wherein the destination is different from the second device.

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REMARKS

Examiner Has Not Shown Teachings for Several Claim Limitations

Claims 1, 3-6, 8, 11-14, and 28-58 are pending in the application. Claims 1, 5, 6, 11-14, 28-33, 36-41, and 44-58 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over a combination of U.S. Patent No. 6,496,477 ("Perkins") and U.S. Patent No. 6,370,112 ("Voelker"). Claims 3, 4, 34, 35, 42, and 43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over a combination of Perkins, Voelker, and U.S. Patent No. 5,751,956 ("Kirsch").

Independent Claims 1 and 28-30

Independent claim 1 requires, *inter alia*, "the packet flow following a first routing path between a source device and a destination device," "the first routing path including the first device," "receiving *both directions* of the packet flow with the first device," "in the first device, identifying the original packets from *both directions* of the packet flow according to the at least one predetermined criterion," and "transmitting the original packets from the first device along the first routing path *to the source and destination* devices." Independent claims 28-30 each contain recitations corresponding to those of independent claim 1.

The Office Action cited the Voelker patent as describing the claimed processing of data packets in both directions. It is respectfully submitted that Voelker does not teach in any way, *inter alia*, "*identifying* the original packets from *both directions* ... according to the at least one predetermined *criterion*," as claimed. Voelker merely teaches carrying cells in both directions (e.g., column 6, lines 23-25) in general. However, independent claims 1 and 28-30 each recite bidirectional packet processing in a more specific way, e.g., identifying the original packets according to at least one criterion. Such an identifying scheme is not taught by the cited portion of the Voelker patent.

Therefore, a mere teaching of bidirectional cells cannot be said to affect the patentability of these independent claims. The assertion by the Examiner that Voelker's general description of bidirectional cells teaches the claimed specific bidirectional scheme is overly broad, and lacking appropriate citations to a reference to constitute a proper rejection in the context of the claimed invention. In summary, the Voelker patent fails to cure the deficiencies of the Perkins patent.

Furthermore, as discussed in detail in the previous responses, the Perkins patent fails to teach or suggest identifying the original packets ... according to the at least one predetermined criterion as claimed. It merely shows a system which "make[s] probable that the distinct streams of packets 111 and their dependent packets 113 will traverse different routes 119 and 117

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through the network 100 from source 103 to destination 105." However, nothing in Perkins shows identifying packets in a packet flow.

Most notably, the portion cited by the Examiner regarding use of reference numeral "i" in Fig. 1 has nothing to do with identification of packets. Rather, the reference numeral "i" merely indicates that the components with such a reference are associated with the computer 105. See, column 7, lines 13-20 of Perkins. For example, the microphone 161.i, the loudspeaker 162.i, etc. correspond to the computer 105 while the microphone 161.1, the loudspeaker 162.1, etc. correspond to the computer 103. It is respectfully submitted that Perkins' reference numerals in no way suggests, implicitly or explicitly, identifying original packets in a packet flow according to at least one criterion as claimed. Therefore, the Perkins patent cannot be said to teach the claimed element recited in independent claims 1 and 28-30 in this regard as well.

Independent Claims 8 and 31-33

Independent claim 8 requires, *inter alia*, "determining which of the original and replicate packets reach their respective destination devices first, thereby identifying a winner destination device," and "awarding a connection to an originating device to the winner destination device." Independent claims 31-33 each contain recitations corresponding to those of independent claim 8.

One specific exemplary embodiment of the invention enables load balancing scheme which awards connection to an originating device to the winner destination device. By contrast, none of the cited references teach or suggest the claimed load balancing features. The Office Action cites various portions of the Perkins patent as describing the claimed load balancing scheme. However, these cited portions of Perkins are not relevant to the claimed invention because the objective of Perkins is to select two intermediate nodes, thereby providing path diversity (e.g., column 9, lines 63-64).

The Perkins system sends real-time information via a proxy A, and dependent information via a proxy B as shown in Fig. 14 (column 26, lines 7-35). Perkins' primary concern is to identify *two or more* appropriate proxies for path diversity communications (column 33, line 52 - column 34, line 14, and Fig. 14). As such, nothing in Perkins implicitly, explicitly, or inherently shows identifying *a winner destination* device as claimed. It is respectfully submitted that Perkins is silent on determining which of the original and replicate packets reach their respective destination devices first. Further, the cited portions fail to teach or suggest awarding a connection to an originating device to the winner destination device as claimed.

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In summary, the Perkins patent fails to teach the claimed load balancing scheme. Therefore, the Perkins patent cannot affect the patentability of independent claims 8 and 31-33. As discussed above, the Voelker patent was cited as describing bidirectional cells. The Voelker patent has been reviewed, and found not to overcome the deficiencies of the Perkins patent.

Independent Claims 41 and 52-58

Independent claim 41 requires, *inter alia*, "the packet flow corresponding to a destination," "transmitting the original packets from the first device along the first routing path to the destination," "transmitting the replicate packets from the first device along a second routing path, the second routing path ... including the second device," and "the destination [which] is different from the second device." Other independent claims 52-58 contain recitations similar to those of claim 41.

According to an exemplary embodiment of the invention, the test device 112 (e.g., a packet sniffer) can remotely monitor all or a specified subset of the traffic through the router 106. For example, the client machine 102 resident on the LAN 104 communicates via the router 106 and the WAN 108 with the server 110. The router 106 identifies the packets of interest. Once the packets of interest have been identified, they are replicated by the router 106. Then, the packets of interest are transmitted by the router 106 along their original routing path to the original destination, i.e., the client 102 or the server 110. Also, the replicated packets are transmitted by the router 106 to the test device 112 along a different routing path. Thus, in this exemplary embodiment, the original destination of the packets of interest is the server 110 while the replicate packets' destination is the test device 112, which is different from the server 110.

None of the cited references teach or suggest the above-identified claimed feature, *inter alia*, the replicate packets are transmitted along the second routing path including the second device, where the *destination* of the [original] packet flow is *different from the second device*. For example, the Perkins patent is directed to a path diversity mechanism (column 3, line 61 - column 4, line 11). In order to provide redundancy in delivering packets, the Perkins system provides multiple paths from the computer 103 (the origin) to the computer 105 (the destination) (column 6, lines 18-31). As indicated in Fig. 1 of Perkins, both of the two paths 117 and 119 have the same destination, that is, the computer 105. See, e.g., column 6, lines 32-41 of Perkins.

It is respectfully submitted that the Perkins patent is silent on transmitting replicate packets to a second device which is *different from an original* destination of the packet flow as claimed. Perkins' path diversity in no way suggests, implicitly or explicitly, that replicate packets are transmitted to a different destination as claimed. Therefore, the portion of the

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Perkins patent cited by the Action does not affect the patentability of these claims. The Perkins patent cannot be said to teach or suggest the above-identified claimed feature.

The Voelker patent has been reviewed, and found not to overcome the deficiencies of the Perkins patent. In view of the foregoing, independent claims 41 and 52-58, and their dependent claims are believed to be allowable over the cited art. Withdrawal of the rejections is respectfully requested.

In summary, Applicants respectfully submit that the Examiner failed to provide a relevant portion of the references as a basis for the teaching of each claimed element. In view of the foregoing, it is respectfully submitted that the rejections of all pending claims should be withdrawn. Applicants believe that all pending claims are allowable in their present form. Please feel free to contact the undersigned at the number provided below if there are any questions, concerns, or remaining issues.

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP

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Limited Recognition under 37 CFR § 10.9(b)

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